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Some North American Botanists.

V. JACOB BIGELOW.

To the older botanists of New England the name of Jacob Bigelow early became a household word. His botanical work was done at a time when there was no professedly complete manual of the plants of the Eastern States in existence, and when no local floras of any extent had been compiled. The only scientific contribution toward a knowledge of the plants of New England was the catalogue published in 1785 by the learned and energetic Manasseh Cutler. The flora of Michaux was too general and ill-adapted for use as a practical manual. Marshall's Arbustum Americanum, which appeared in 1786, was little more than an annotated alphabetical catalogue of trees and shrubs, the most of which grew in Pennsylvania. The other contributions to a knowledge of American botany accessible to Northern students when Bigelow began to write, were nothing more than a few local catalogues and scattered articles in various publications, unless, indeed, we accept Prof. B. S. Barton's work on Elementary Botany, which appeared in 1803, and which, if it had little scientific merit, could at least claim the honor of being the first American text-book. With this meagre literature Jacob Bigelow began his botanical labors. He had been raised a farmer's boy, educated at Harvard, whence he graduated with honors, and had, in 1810, begun the practice of medicine in Boston. For some time young Bigelow was much exercised as to the choice of a profession, the college graduates of that day being limited to the three "learned professions," divinity, law and medicine. His natural aversion to medicine was removed by the eloquence and enthusiasm of Dr. John Warren, who delivered a course of lectures at Harvard each year on the subject. By teaching school and by various other means he succeeded in graduating from the medical department of the University of Pennsylvania in 1810 in his twenty-third year. At this University he formed the acquaintance of the gifted Prof. W. P. C. Barton, from whom he obtained, as he said, "the rudiments of a botanical taste which adhered to me for many years." This Professor Barton published several works on American botany, the most pretentious of which was the uncompleted "Flora of North America," begun in 1821. The first manifestations of a taste for botany had been experienced by young Bigelow long before this time, however. He often told his friends that from his earliest years he watched every plant and wondered over the variety of vegetable productions. He once laughingly said to a friend that his first lesson in botany was from the "most learned inhabitant of Sudbury" to whom he carried a Star of Bethlehem to ask its name. The "learned inhabitant" replied, "Why, that's grass."

Dr. Bigelow gained little pecuniary benefit from his "tin sign," as he used to call it, for the first year after his graduation. In 1811, he became associated with Dr. James Jackson, and for nearly sixty years ranked next to his venerable senior, the most popular practitioner of the city. In 1812 he began, with Professor W. D. Peck, of the University, a course of lectures on botany. These lectures at once became very popular, especially those delivered by Dr. Bigelow, who possessed a most happy manner of illustration quite unknown to his colleague. "Finding that a considerable taste had sprung up among my pupils for the study of plants," he says, "I began to collect materials for a description of the native plants of Boston and its vicinity, which I published in 1814 under the name of 'Florula Bostoniensis.'" This was a bright 12mo. of 268 pages, containing 294 genera. Most of the plants described grew within five or ten miles of Boston, and were collected during the two preceding seasons. It was arranged entirely upon the artificial system. To each plant was added a concise and popular description. The difficult genera were not well represented in this first edition, for the author had not had sufficient time for studying them closely. Nor were the limits of species as closely drawn then as now. In a subsequent edition of the flora he remarks, under Aster and Solidago, that "there are a vast variety of hybrids and subspecies which the labors of botanists have not yet been able to reduce under permanent characters, though names without number have been applied to fugitive varieties. In this work I have inserted only the more distinct or leading species, from which a great part of the others in this vicinity are probably descended." Florula Bostoniensis may be said to be the first distinctive local flora published in America. It passed through three editions, the second of which was for some thirty years the leading manual of the plants of the North-eastern States. Although much of the contents were compiled, the short diagnoses must have been original. These short descriptions so beautifully expressed and so accurately drawn from the best characters of the plant, made his work most deservedly popular. Soon after the first edition was published he began, with Dr. Francis Booth, the collection of materials for a flora of New England. The mountains of Vermont and New Hampshire were diligently explored, and considerable progress was made in the proposed undertaking. In the meantime Dr. Bigelow had been made Professor of Materia Medica and Botany in Harvard University, and had also received the appointment of Rumford Professor of Technology. Some of the publications of Muhlenberg, Nuttall, Eaton, and Torrey had also appeared, and with his limited time and the increasing literature before the people, he decided to abandon the New England Flora. The results of his study and investigations are easily traced in the second edition of his Florula Bostoniensis, however, which appeared in 1824. During the ten years since the appearance of the first edition he had collected materials for the description of 26 new species, of which seven still stand in our manuals, Ceanothus ovalis, Juncus militaris, Stellaria borealis, Actæa alba, Lathyrus maritimus, Spiranthes gracilis and Myriophyllum tenellum. He also made a new genus, Bootia, founded upon the Potentilla arguta of Pursh. Although still retaining its modest title, this second edition was a virtual manual of New England botany, describing 455 genera and no less than 1200 species. It will be remembered that Carex and other difficult genera had received little attention at this time. It was not until after the second edition had appeared that Professor Dewey began his writings on Caricography. A third edition appeared in 1840, with 29 additional genera, but with the general body of the work remaining the same. This was the last work in this country arranged upon the artificial system. While realizing fully the advantages of the natural arrangement, he still desired to preserve the uniformity of his work, and therefore adhered to the old method.

During the years between 1814 and 1824 Dr. Bigelow did most of his botanical work. Some idea of the versatility and genius of the man may be formed from the facts that he was at the time holding two professorships, both of recent endowment, was one of the physicians of the Massachusetts General Hospital, was carrying on a large private practice, was preparing a work on the medical plants of North America, was elaborating the list and nomenclature of the Materia Medica of the first edition of the United States Pharmacopœia, was a member of a number of scientific and literary societies to which he made frequent and elaborate contributions, was in correspondence with nearly all the leading botanists of Europe and America, and withal often turned his attention to poetry and Latin composition. He also brought out an edition of Sir J. E. Smith's Introduction to Botany. He was one of the very first, if not the first, in this country to make a scientific attempt toward a medical botany. The only works on that subject previous to his time appear to be Benjamin Franklin's edition of an English work by Dr. Short, with preface, notes and appendix by John Bartram, issued in 1751, and an "American Materia Medica," wholly in Latin, published in Europe in 1787 by Dr. Schoeff. Dr. Bigelow's "American Medical Botany" was published in three volumes, from 1817 to 1820. Each volume contained an extensive account of twenty species, each illustrated by a colored plate. The properties of many of these species had received chemical manipulation at his hands, and had been used in his private practice. His work upon the Materia Medica of the United States Pharmacopœia, which appeared in 1820, was characterized by a most laudable departure from the old systems of cumbrous nomenclature. In all possible cases he employed a single name for each drug in place of the double or triple names previously in use, a plan which is still followed in our National Pharmacopœia. He followed up this labor by publishing his practical treatise, long familiar to the profession under the name of "Bigelow's Sequel," a succinct, judicious and perspicuous commentary on the characters, qualities and uses of the remedies adopted by the national medical representatives.

Dr. Bigelow's leading characteristic was the versatility of his genius. He was not only a botanist, but one of the most skilled physicians of his time, and adept in mechanics and machinery, and a most polished classical scholar. His works upon medical topics are among the most important ever written. As in botany, so in medicine, he was a pioneer, but in the latter case a pioneer to inaugurate a most radical reform in the practices of his time. All his medical writings bear strong evidence of his lack of faith in drugs and heroic remedies, and in the reliance he placed upon the recuperative processes of nature. Indeed, his work upon "Self-limited Diseases" is an avowed attack upon the old methods.

O. W. Holmes asserts that "this remarkable essay has probably had more influence on medical practice in America than any similar brief treatise, we might say than any work ever published in this country. Its suggestions were scattered abroad at the exact fertilizing moment when public opinion was matured enough for their reception." But the reforms inaugurated by Dr. Bigelow were by no means confined to the overturning the heroic treatment of disease. His printed productions and addresses which record his progressive views on paramount themes of professional interest cover a period of more than half a century. Most of these writings are collected in two volumes, "Nature in Disease" and "Modern Inquiries." Dr. Bigelow was the first to fill the chair of Rumford Professor in Harvard College, a professorship endowed by the famous Count Rumford for the purpose of teaching the application of the sciences to the useful arts. He is said to have been so fond of mechanical studies that every workshop passed upon his walks, and every mechanic with whom he conversed, were made to yield some new treasure to his stock of information. He was familiar with nearly every trade and nearly every mechanical process. When engravers and methods could not be found for illustrating his medical botany, he himself became inventor, and produced the method of *aqua-tinting* colors, a method which no doubt "would have passed into profitable use had not the invention of lithography soon afterwards superseded its employment." The results of his labors as Rumford Professor culminated in his exhaustive "Elements of Technology," which appeared in 1829.

But there was in practice another important error upon the overturning of which Dr. Bigelow concentrated the whole weight of his ability and influence—the existing practice of restricting education to ancient languages and to metaphysics. In the energetic stand which he took in this generous cause he excited immediate antagonism, and was often charged with bearing no sympathy for the languages, a thrust most wantonly false, for none knew them better than he, and few used them more skilfully. He objected to the time they usurped in the college courses, however, and his writings and addresses did much to institute a reform. He wrote two important essays upon this topic, "The Limits of Education," in 1865, and "On Classical and Utilitarian Studies," in 1866. This latter is said to be "the longest, the most elaborate and the most learned of his written productions."

Jacob Bigelow will ever be best and widest known, however, through his efforts in establishing and perfecting the beautiful Mt. Auburn cemetery. He was the first in the world to conceive and to perfect plans for applying the appropriate art of landscape gardening to the adornment of the "city of the dead." From his first public effort in 1825, through the seven years in which he persistently urged the adoption of his plans, and during the half century which followed, he had the satisfaction of being known as the originator and strongest advocate of an art which he lived to see world-wide in its practice. When others took no interest in his measures, he himself became architect and gardener, and attended to all the details of the undertaking. One of his last labors was to devise a mammoth sphinx, which was sculptured in stone and presented to the cemetery as a monument to the soldiers who perished in the war. Ere the monument was placed on its site its venerable projector had been wholly deprived of vision, but with others' help he was raised slowly and enabled to pass his hands over the whole structure, that he might "see it by feeling." He compiled a little book descriptive of the monument, and sketching the propriety of transferring the emblem from Egypt to America. He also wrote an attractive volume giving a detailed history of the cemetery.

Dr. Bigelow had the highest appreciation of the beautiful in nature and the meritorious in literature and art. Always in love with nature, he named the walks and paths of Mt. Auburn after plants and flowers. Nothing could more fitly preserve his memory than its association with the vegetable world through the genus Bigelovia, which De Candolle bestowed, in 1836, upon some golden-flowered Compositæ. More than thirty American species have since been referred to this genus.

Dr. Bigelow early took to poetry, and at intervals during his life he wrote poems in English, Latin and Greek. A volume of his collected poems was anonymously published under the name of "Eolopœsis, American Rejected Addresses." When at last he became infirm and was confined to his room, he amused himself by translating into Greek and Latin verse the Mother Goose melodies, which he published under the title of "Chenodia." Toward the close of his life the bright intellect became dimmed, the lamp burned low, and on the 10th of January, 1879, in his ninety-second year, the last ember expired.—L. H. BAILEY, JR.